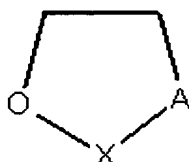


WHAT IS CLAIMED IS:

1. An electrolyte for a rechargeable lithium battery comprising:
 a non-aqueous organic solvent;
 a lithium salt; and
 an additive represented by formula 1:



(1)

where X is a functional group that includes Y, where Y is an element selected from Groups 3, 4, 5, and 6 of the Periodic Table; and

A is O or NR, where R is a C₁ to C₆ alkyl group;

wherein if X is CO, A is NR.)

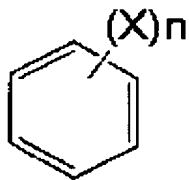
2. The electrolyte of claim 1, wherein Y is selected from the group consisting of B, C, Si, N, P, and S.

3. The electrolyte of claim 1, wherein X is selected from the group consisting of SO₂, CO, SO, and PO.

4. The electrolyte of claim 1, wherein the additive is provided in an amount between 0.01 and 10 wt% of the weight of the non-aqueous organic solvent.

5. The electrolyte of claim 1, wherein the non-aqueous organic solvent is selected from the group consisting of cyclic carbonates, linear carbonates, esters, ethers, ketones and mixtures thereof.

6. The electrolyte of claim 5, wherein the non-aqueous organic solvent further comprises a halogenated benzene represented by formula 2.



(2)

where X is F, Cl, Br or I, and n is an integer from 1 to 3.

7. The electrolyte of claim 6, wherein the halogenated benzene is provided in an amount between 1 and 20 parts by weight based on 100 parts by weight of the electrolyte.

8. The electrolyte of claim 1, wherein the lithium salt is selected from the

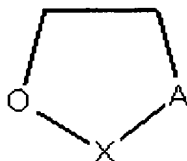
group consisting of lithium hexafluorophosphate (LiPF_6), lithium tetrafluoroborate (LiBF_4), lithium perchlorate (LiClO_4), lithium trifluoromethanesulfonate ($\text{CF}_3\text{SO}_3\text{Li}$), lithium hexafluoroarsenate (LiAsF_6) and mixtures thereof.

9. A rechargeable lithium battery comprising:

an electrolyte comprising a non-aqueous organic solvent, a lithium salt and an additive represented by formula 1:

a positive electrode comprising a positive active material which is capable of intercalating and deintercalating lithium; and

a negative electrode comprising a negative active material which is capable of intercalating and deintercalating lithium; and



(1)

where X is a functional group that includes Y, where Y is an element belonging to Groups 3, 4, 5 or 6 of the Periodic Table; A is O or NR, where R is a C_1 to C_6 alkyl group; and if X is CO, A is NR.

10. The rechargeable lithium battery of claim 9, wherein Y is selected from the group consisting of B, C, Si, N, P, and S.

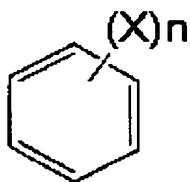
11. The rechargeable lithium battery of claim 1, wherein X is selected from the group consisting of SO_2 , CO, SO, and PO.

12. The rechargeable lithium battery of claim 9, wherein the additive is provided in an amount from 0.01 to 10 wt% of the weight of the non-aqueous organic solvent.

13. The rechargeable lithium battery of claim 9, wherein the negative active material is selected from the group consisting of crystalline carbon, amorphous carbon and carbon composites.

14. The rechargeable lithium battery of claim 9, wherein the non-aqueous organic solvent is selected from the group consisting of cyclic carbonates, linear carbonates, esters, ethers, ketones and combinations thereof.

15. The rechargeable lithium battery of claim 14, wherein the non-aqueous organic solvent further comprises a halogenated benzene represented by formula 2:



(2)

where X is F, Cl, Br or I, and n is an integer from 1 to 3.

16. The rechargeable lithium battery of claim 15, wherein the halogenated benzene is provided in an amount from 1 to 20 parts by weight based on 100 parts by weight of the electrolyte.

17. The rechargeable lithium battery of claim 9, wherein the lithium salt is selected from the group consisting of lithium hexafluorophosphate (LiPF_6), lithium tetrafluoroborate (LiBF_4), lithium perchlorate (LiClO_4), lithium trifluoromethanesulfonate ($\text{CF}_3\text{SO}_3\text{Li}$), lithium hexafluoroarsenate (LiAsF_6) and combinations thereof.

18. An electrolyte for a rechargeable lithium battery comprising:
a non-aqueous organic solvent;
a lithium salt; and
an additive of the form



where X is selected from the group consisting of SO_2 , CO, SO and PO and A is selected from the group consisting of O and NR where R is a C_1 to C_6 alkyl group, wherein, if X is CO, A is NR.